



***Navy Warfare Development Command  
Maritime Battle Center  
Navy Experimentation and Expeditionary Warfare***



# ***Overview***

- **NWDC Experimentation Approach & Process**
- **Review Recent Fleet Battle Experiments**
  - **Littoral Context and Expeditionary Initiatives**
- **Expeditionary Warfare Initiative Summary**
- **Issues / Scope for Future Work**



# ***Navy Approach to Experimentation***

- **Concepts based**
- **Live Forces, M&S, Surrogates and Emulations**
- **Venue for Prototype Development**
- **Rapid Experimentation Cycle** (6 month cycle)
  - Organizational and Process Agility
  - Rapidly mature concepts
- **Iterative Experiments**
- **Experiments not demonstrations**
  - Freedom to fail
- **Partner with Numbered Fleets**
  - Forward as well as CONUS / Critical Operational Interests
- **Inherently Joint and Combined**
  - Millennium Challenge Series



# NWDC Innovation Process

JV 2010 / 2020

Forward From the Sea

ONCE FROM

**Network  
Centric  
Operations**

## CONCEPTS

Information-Knowledge

Assured Access

Effects-Based Ops

Sea-based Forces

Geo-political  
CONTEXT



CRITICAL  
OPERATIONAL  
ISSUES

Potential Solutions

Doctrine, Technology, Organization

Candidate  
Initiatives

**FBE**

Wargame

M&S

Initiatives

Training

M&S

Distributed  
Wargame

Laboratory  
Experiments

Research

Doctrine

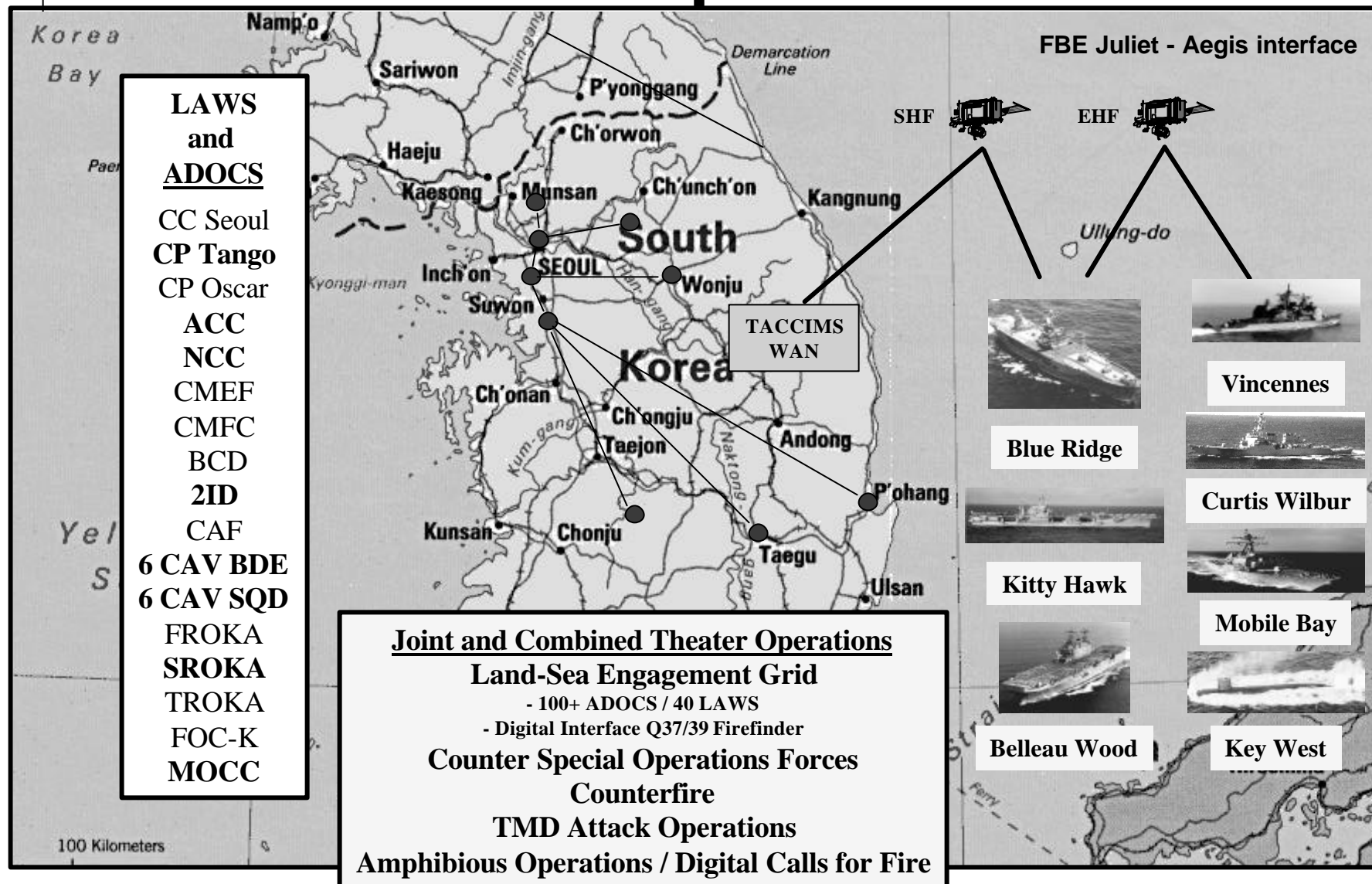
New  
Technology



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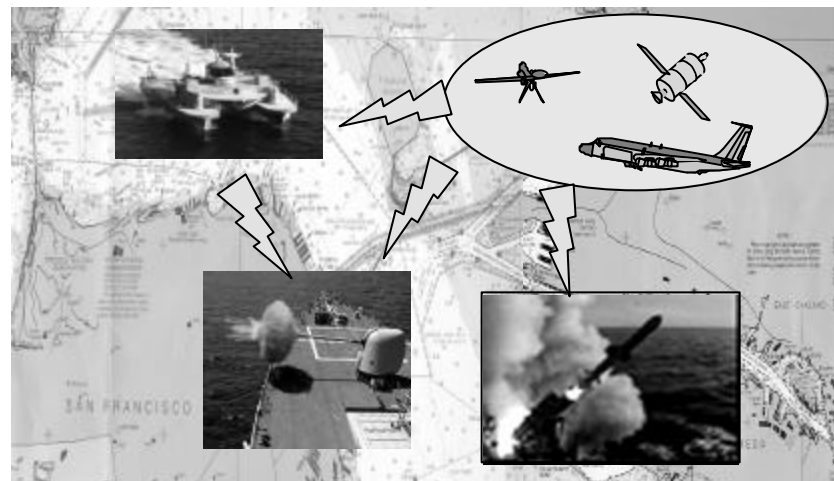
# Fleet Battle Experiment Delta





# Fleet Battle Experiment Echo

- Scenario
  - Insurgency in Friendly Nation
  - Urban Littoral Battlespace
  - Asymmetric Threat
  - WMD threat
- Concepts / Initiatives:
  - Full Dimension Protection Cell
  - ECOC / SACCEX
  - Non-lethal weapons - HPM
  - Digital Fires Network in Urban Terrain
  - Sensor Grid in Urban Environment
  - Consequence Management

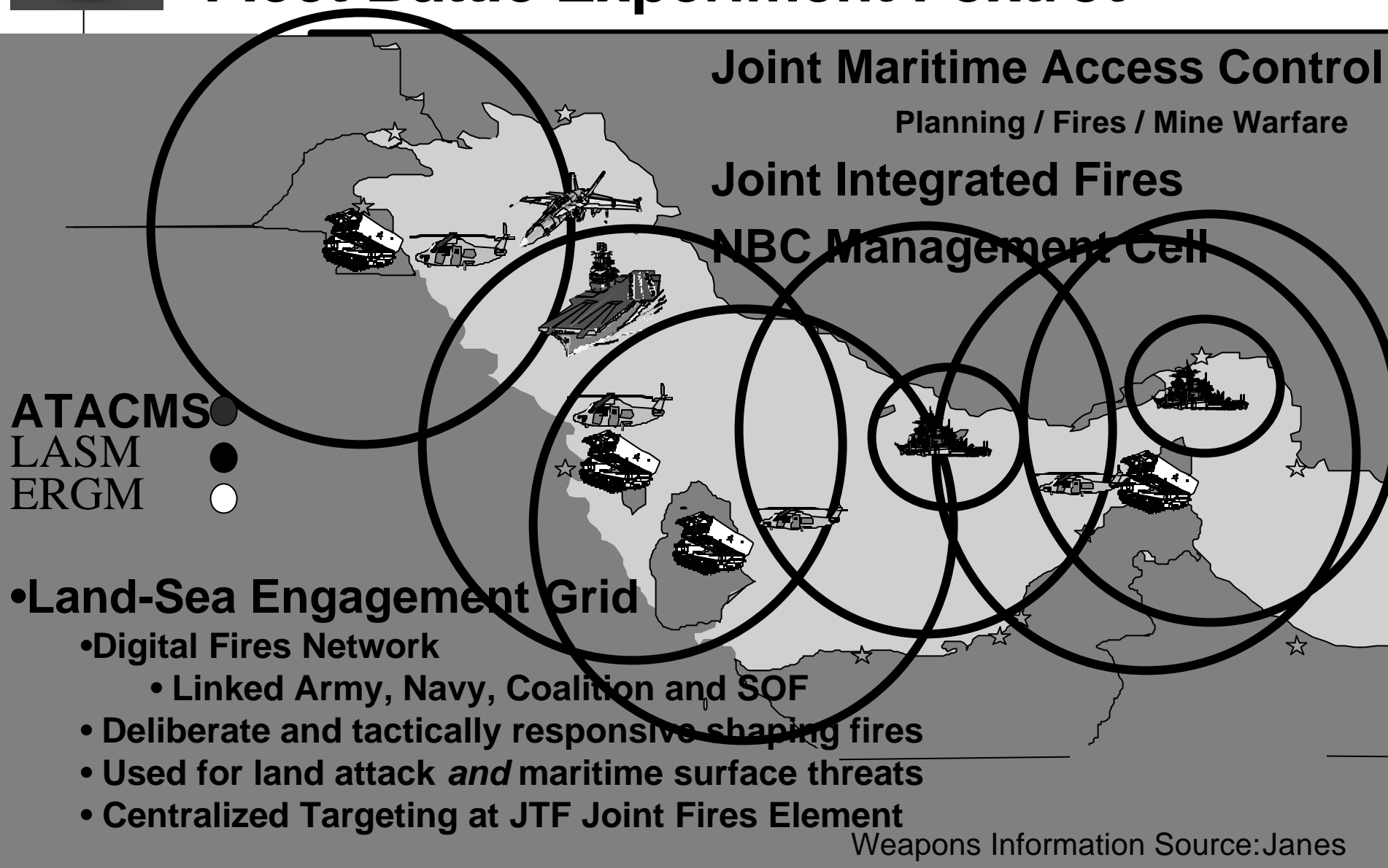




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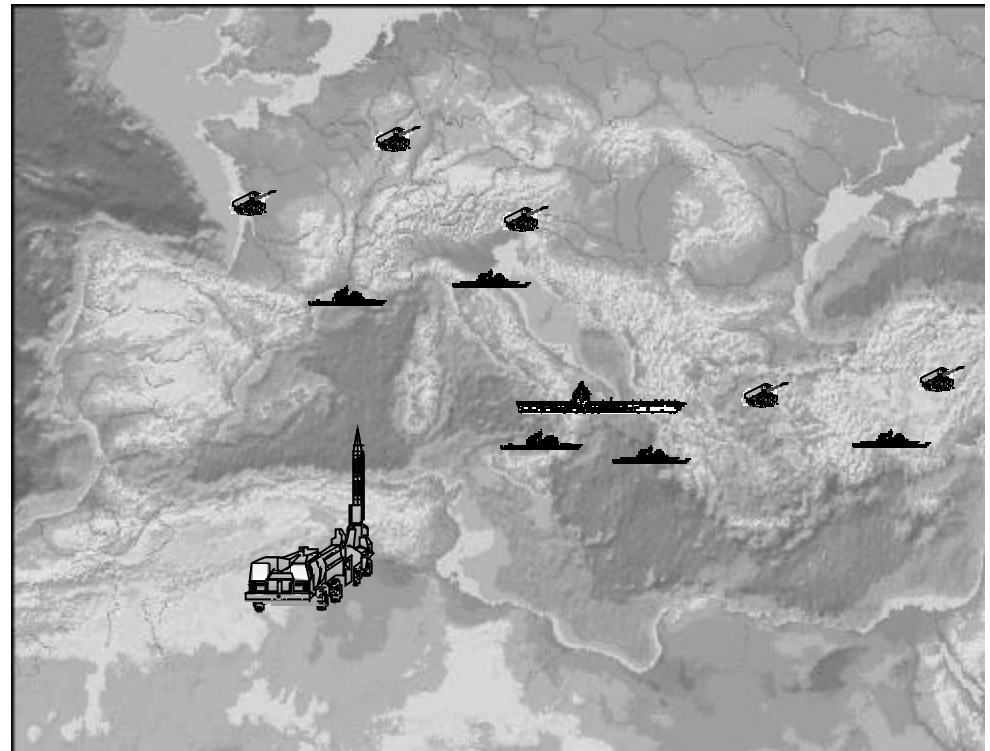
# Fleet Battle Experiment Foxtrot





# FBE Golf

- 3 -12 April 2000
- Concepts:
  - Assured Access
  - Speed of Effects
- Context
  - WMD Threat (chem/bio)
  - TBMD Threat
  - Local SEAD only
  - C2, Serbia vs Kosovo
- **Critical Operational Issues**
  - Time Critical Targeting
  - Theater Ballistic Missile Defense
  - Decentralized TCT



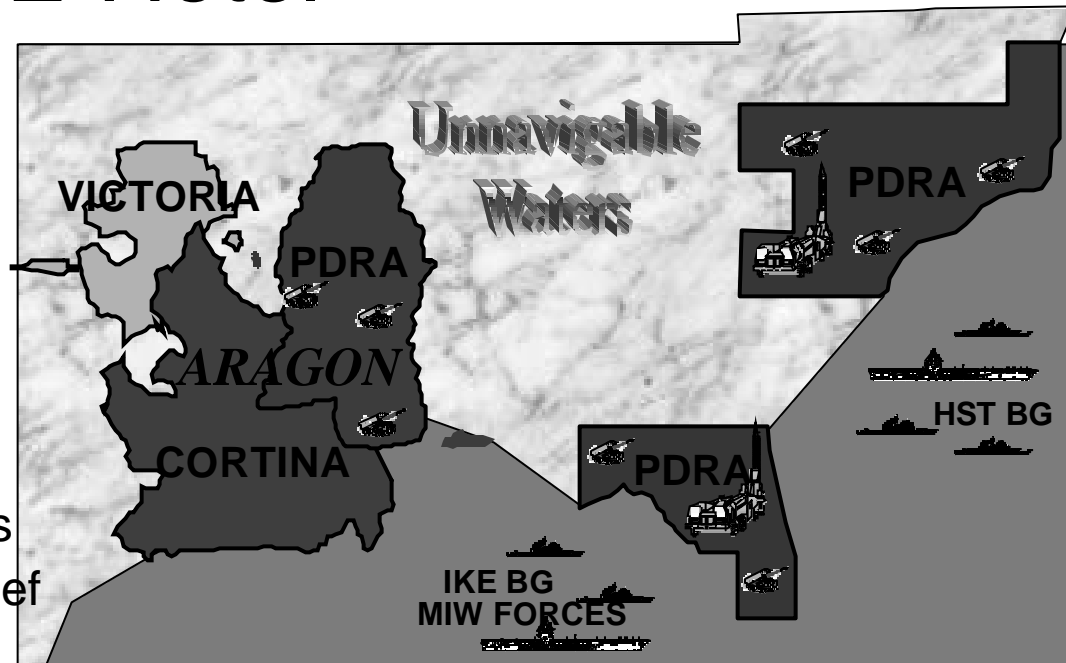
**“Tailor emerging concepts and technologies to theater specific warfighting concerns”:**





# FBE Hotel

- 28 Aug -12 Sep 2000
- Concepts:
  - Assured Access
  - Effects Based Ops
  - Information Knowledge
- Context:
  - 2005-2010
  - Robust Mine Capability
  - Diesel Electric Submarines
  - Capable C2 / Air / Coast Def
- Critical Operational Issues:
  - JFMCC Planning Process
  - Joint Fires / TCTs
  - Net Centric ASW
    - SGIMAT / MUSICAL / LELFAS
  - STOM support MIW / Fires
  - MIW Conops
    - ONR / CSS / UUVs / LRS et al
  - Information Operations



**The application of network centric operational principles to the problem of gaining and sustaining access in support of naval operations and maneuver in the littorals.**



# NWDC & Joint Experimentation

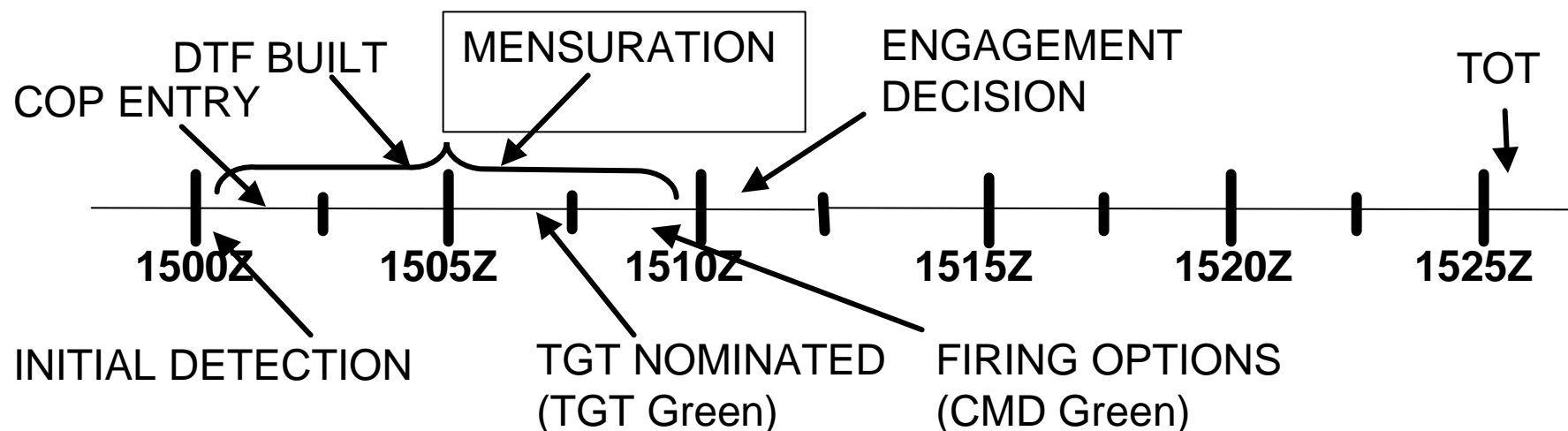
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- **JFCOM Challenge Series / RDO / Congressional Language**
- **Cooperative service-to-service initiatives**
  - **AIR FORCE JEFX**
    - '99 NWDC O-6 Deputy CAOC, 25 personnel, Distributed Operations, Battle Control Cell, Dynamic Battle Control
    - '00 Naval Fires via simulated CG Fires Cell (China Lake IBAR) to Dynamic Battle Control Cell at Nellis AFB via Info Work Space and LAWS
  - **ARMY**
    - ADOCS, Firefinders, Apaches in FBE Delta (CSOF/Counterfire)
    - DOCC, Apaches, ATACMS in FBE Foxtrot
    - DFN CFF, LAWS to AFATDS with 10<sup>th</sup> MTN Div in FBE Hotel
  - **USMC**
    - SACC/TACC/ in FBE Bravo/Echo
    - Digital CFF and ECOC integration FBE Alfa/Delta/Hotel/India



# TARGETING DISCONNECTS



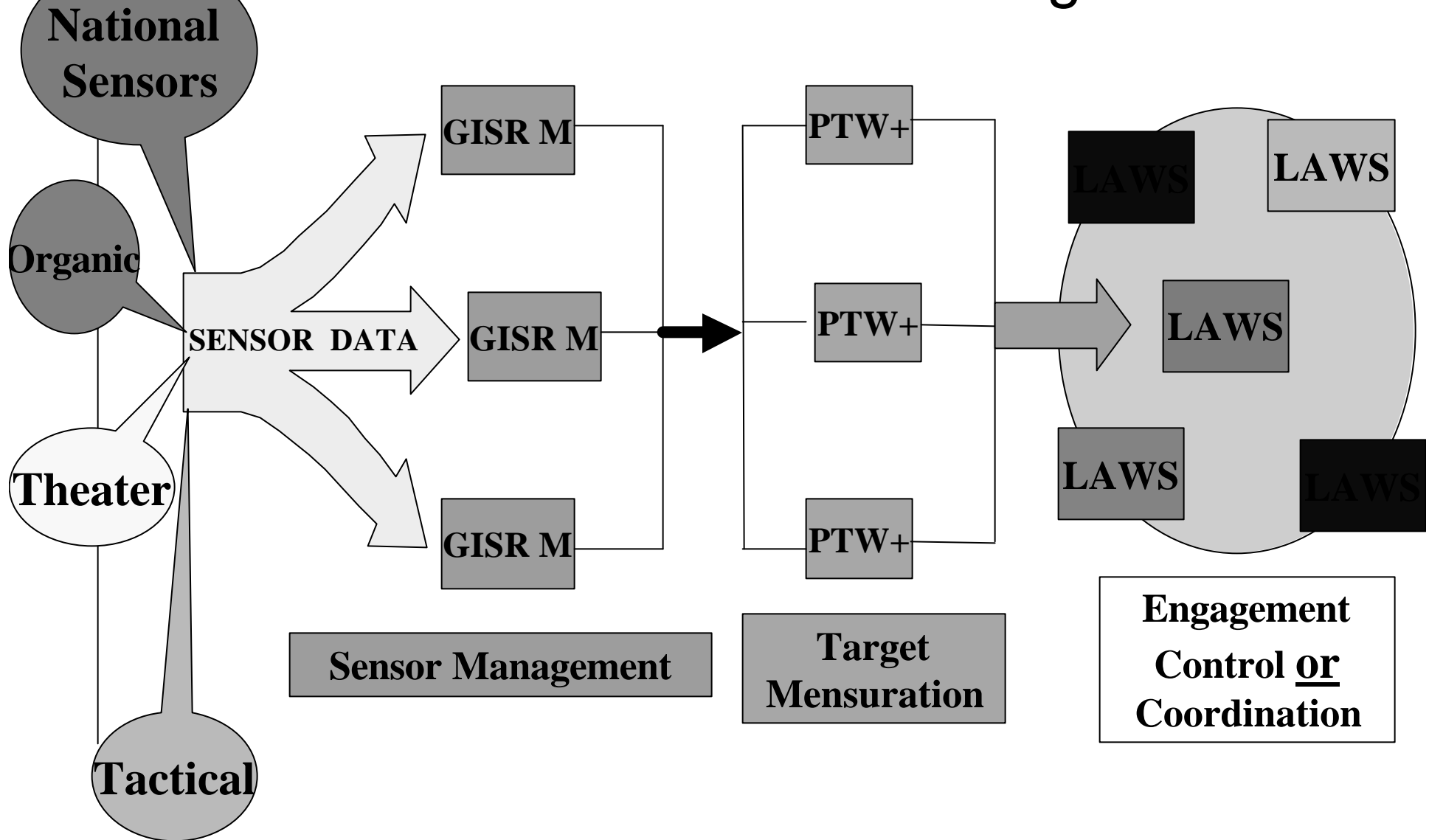
**Present DFN/TCS paradigm peak performance using an advanced, futuristic, experimental network = @ 26 minutes.**

**Mensuration for precision weapons is not correct paradigm for targets with < 30 minutes dwell time. Must go to another paradigm for TCTs.**

- Area Weapons, Precision Weapons used in patterns
- Homing Weapons
- Weapons updated in flight from close in sensors
- Hypersonic

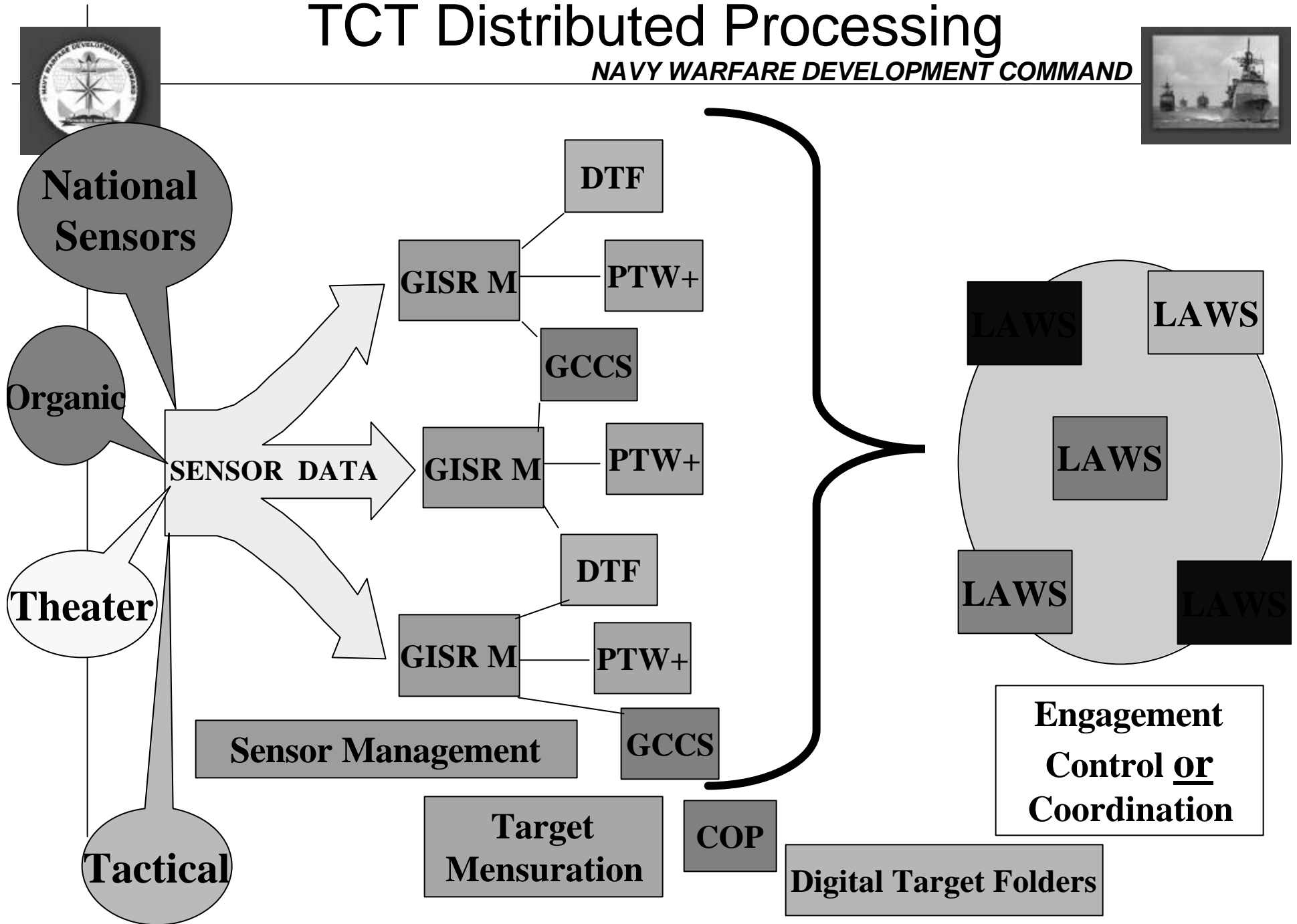


# TCT Parallel Processing



# TCT Distributed Processing

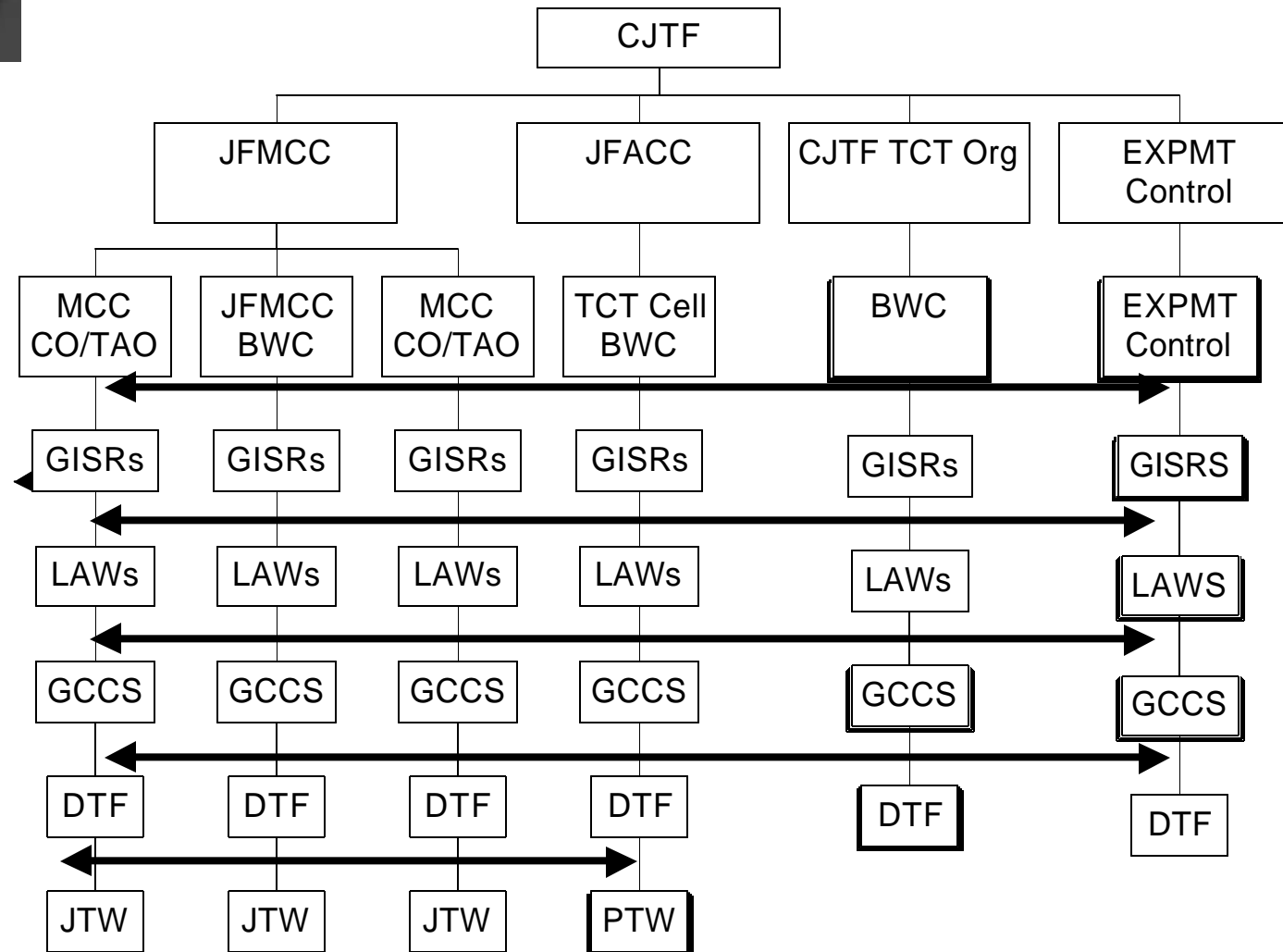
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# Adaptability -- C2

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**Functional Cross-Node Comms flatten C2, speed up process**  
**Decentralized vs Centralized Control**



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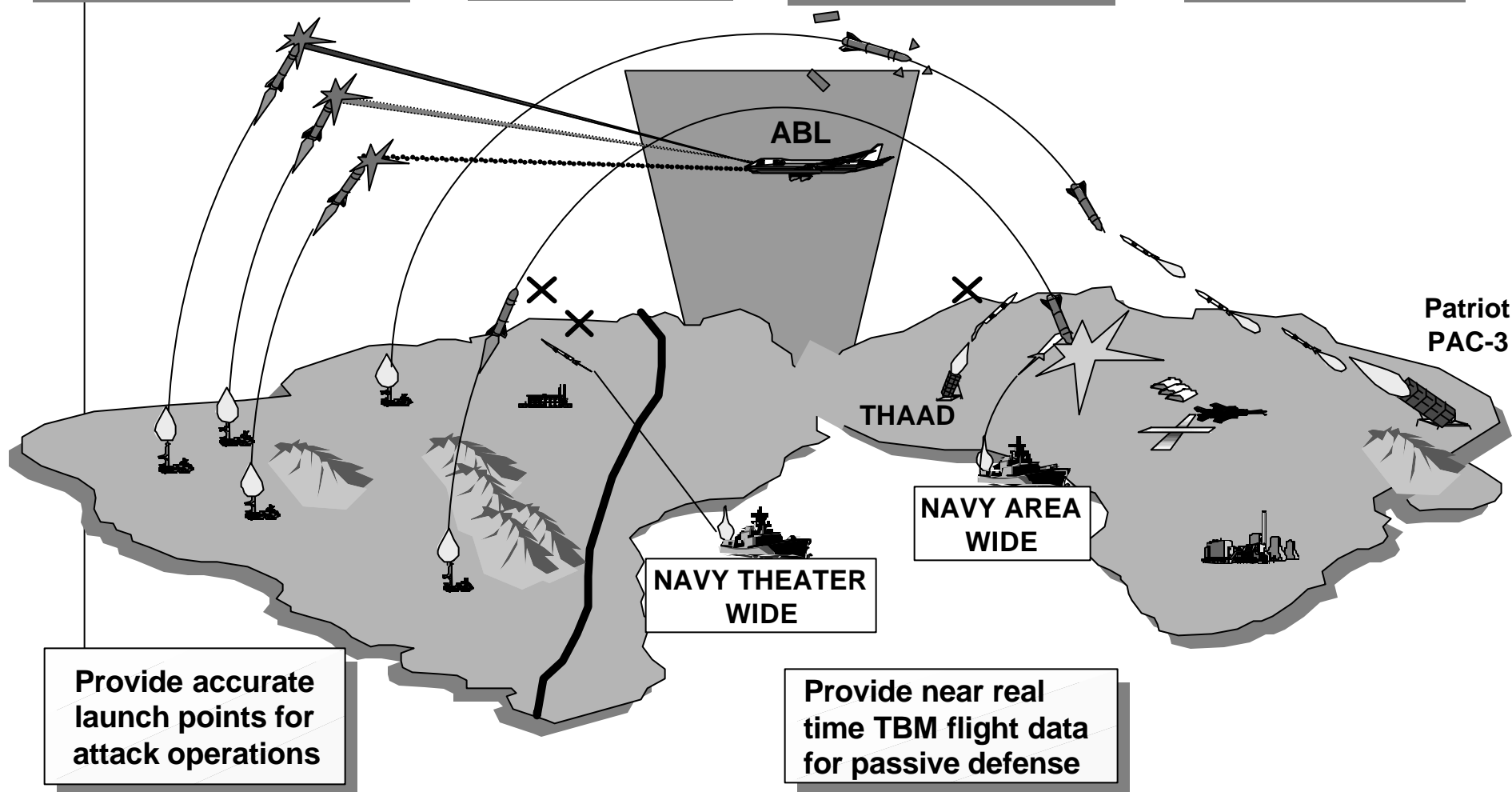
# TAMD Engagement & Sensors Networks

Integrated / Coordinated

Layered Defense

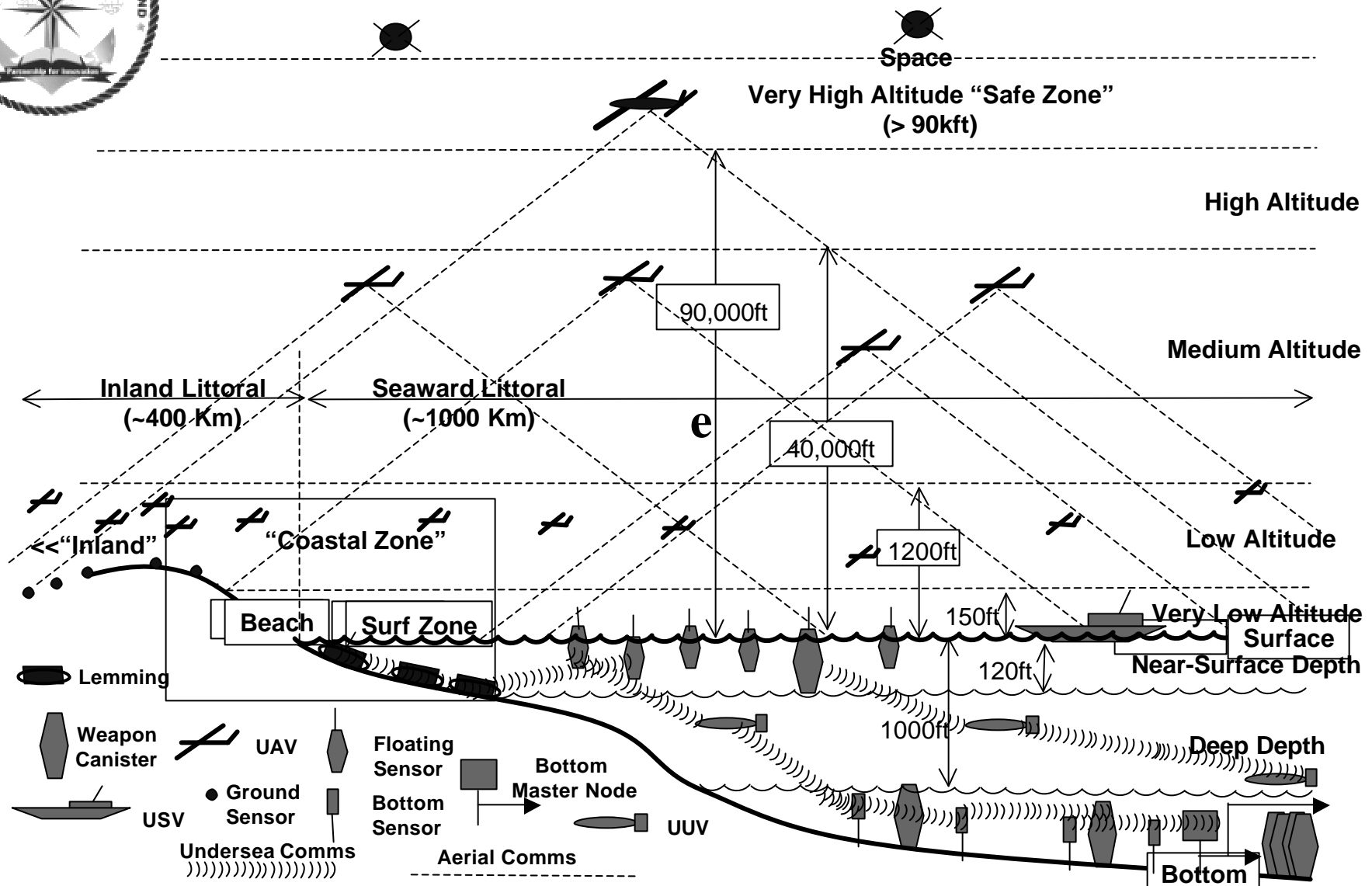
Multiple Technology

Synergistic Effect





# Expeditionary Sensor and Weapons Grid







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# **Experimentation & Expeditionary Warfare**

- **Naval Targeting Process – JFMCC**
- **Digital Fires Network**
  - **Time Critical Target / C2 / Dynamic Battle Control / N2 & N3 linkage**
  - **Counter SOF / Counterfire / Land-Air-Sea Grid / MIW**
  - **ECOC / SACC / TACC / ELB / TES-N**
  - **Naval Fires integration with Air Force and Army**
- **Sensors / ISR Management – more sensors / more types / integrate**
- **Common Operational Picture / DCP Tools / Bandwidth / R3**
- **Theater Air Missile Defense / Joint / Laser / multi-mission issues**
- **Mine Warfare / In stride timelines / STOM support**
- **ASW / Underwater COP and engagement grid**
- **Littoral Geography and Urban Terrain**
- **Non-Lethals (MIO and Full Dimension Protection)**



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# **Experimentation & Expeditionary Warfare**

- **Evolutionary vs Revolutionary (Sustaining vs Disruptive)**
- **Cultural Change presents challenges regardless:**
  - **Command Relationships**
  - **Doctrine**
  - **4D Deconfliction**
  - **Effects Based Operations**
  - **C2 Issues – Centralized vs decentralized**
  - **ISR Management / Sensor Integration**
  - **Deep and Volume Fires / Hypersonic weapons**
  - **Common Systems vs Integration (software/middleware)**
    - **M&S / DCP / Sensors / Wpn Tgt Pairing Tools et al**



***“It is not the strongest that survives,...***

***...nor the most intelligent...***

***...but the most adaptable”***

***- Charles Darwin***



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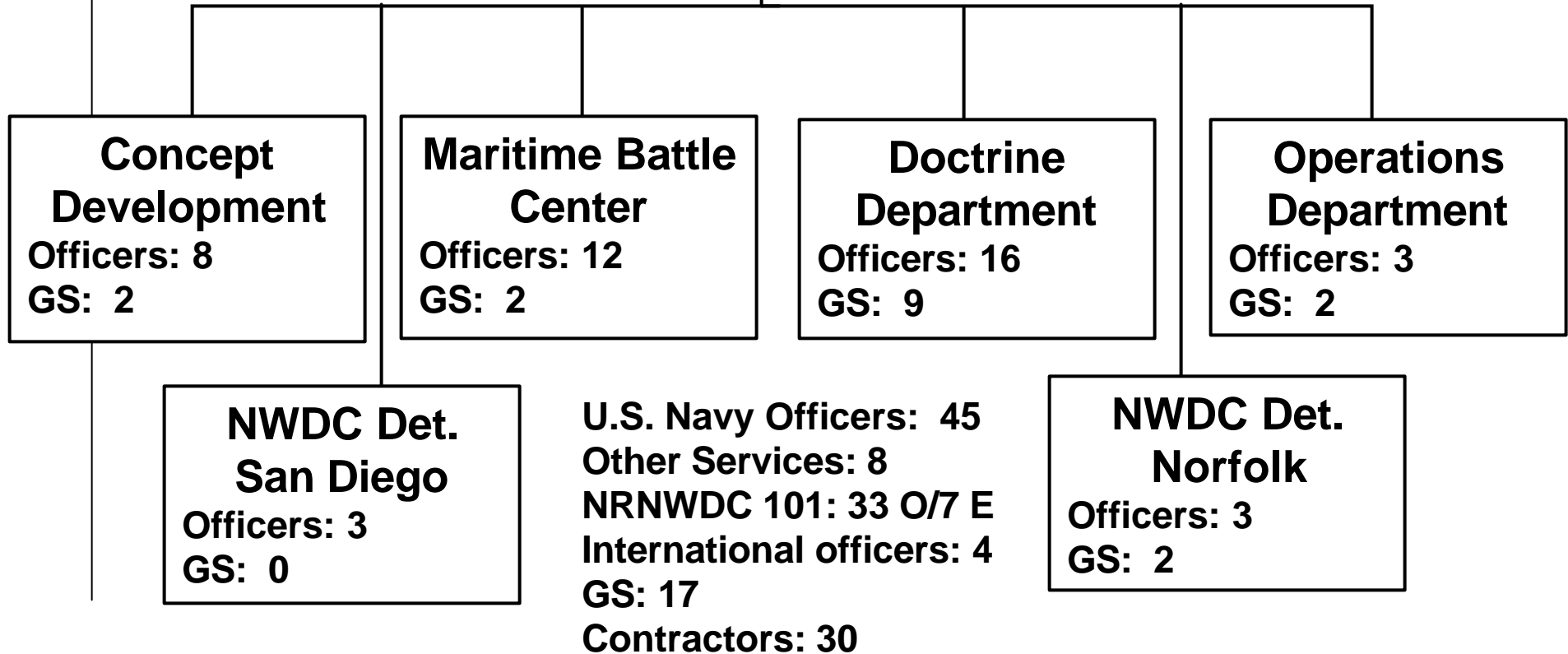


# Backups



# NWDC Organization

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## ***NWDC Mission***

- Develop Navy operational and warfighting concepts.
- Plan and coordinate experiments based upon concepts.
- Represent Navy with Joint and other Service Labs and tactical development commands.
- Primary POC for all naval and joint/combined doctrine and experimentation





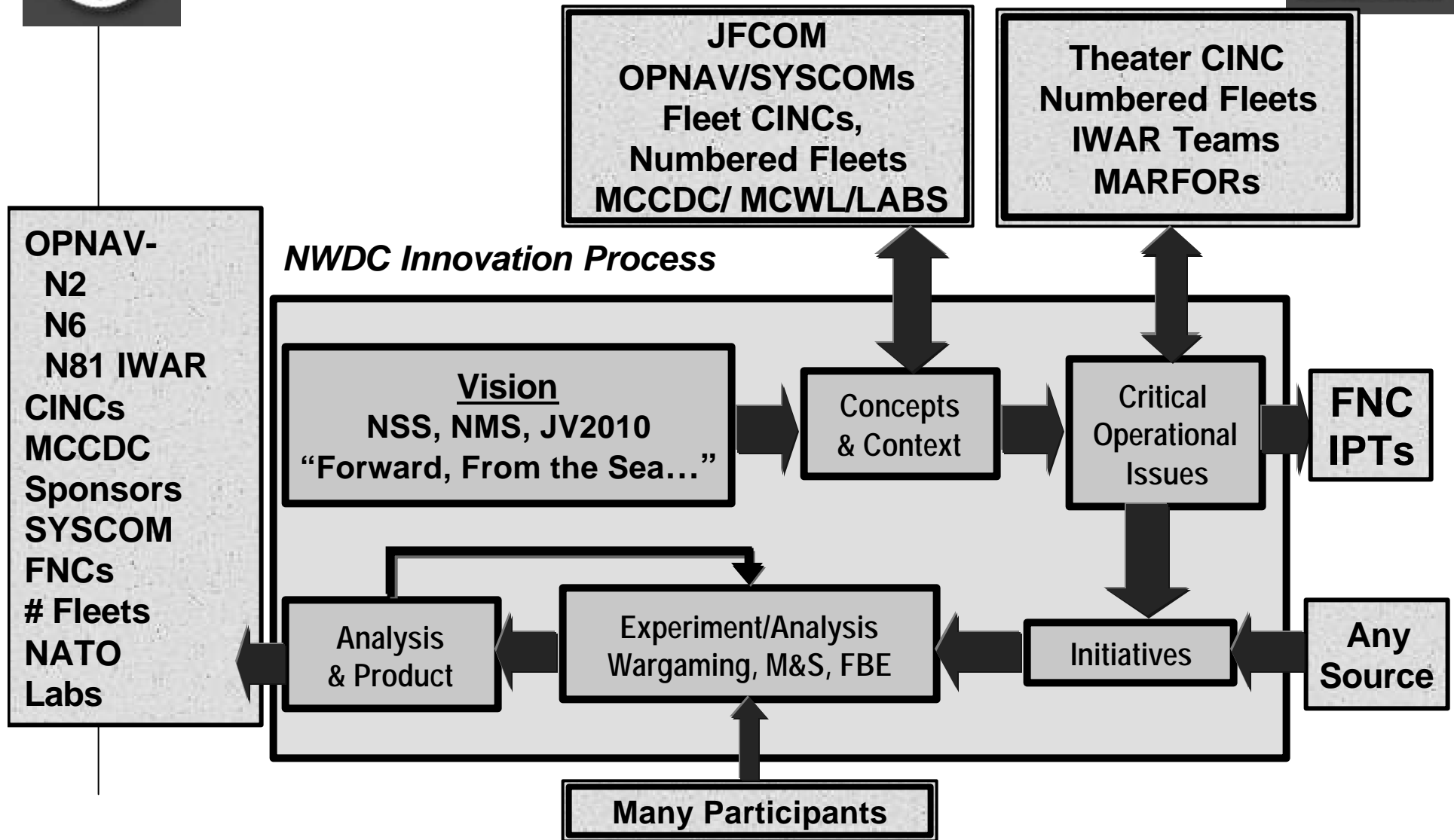
# ***Maritime Battle Center***

- **Mission**
  - Design/Plan/Execute Fleet Battle Experiments (FBE)
  - Assess experiments and disseminate results
  - FBEs 2005-2010
  - Joint Experimentation
- **FBE Goals:**
  - Improve how we fight: OPLANS, Doctrine, TTP, CONOPS for the current Navy
  - Validate requirements and define capability disconnects
  - Explore technological, doctrinal and organizational desired operational capabilities for the future
  - Foster innovation--an agent for change



# NWDC Partnerships

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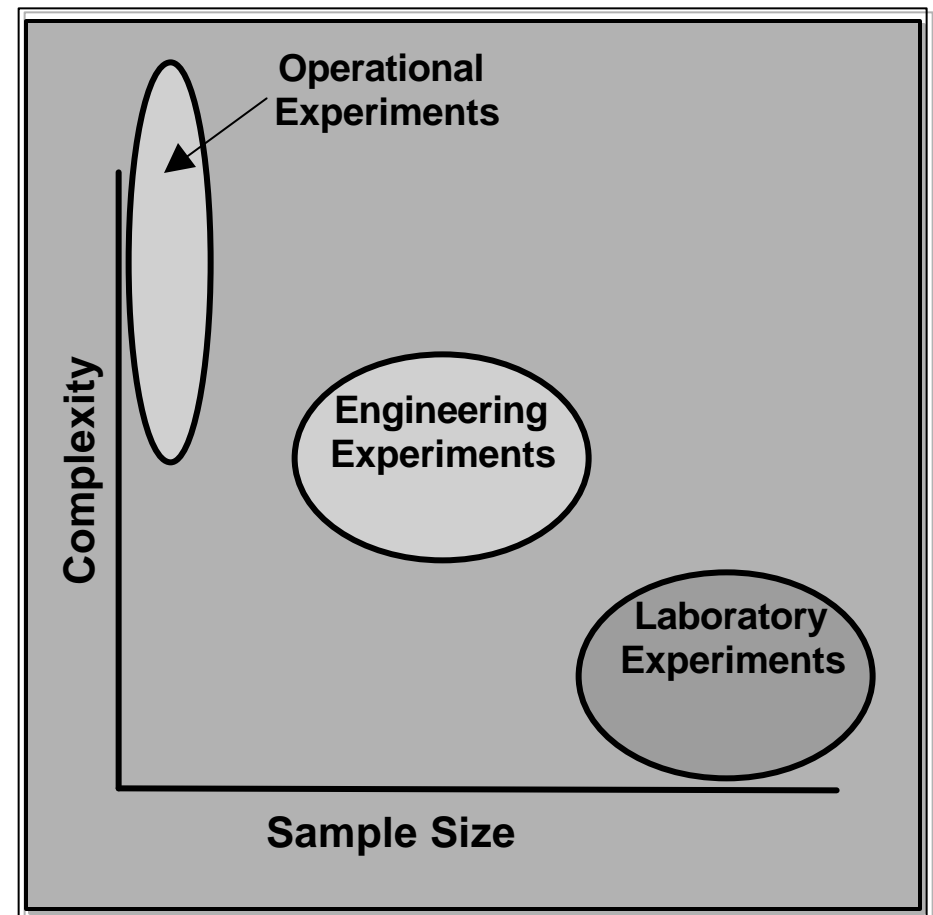






# ***Fleet Battle Experiments***

- **Concepts based experimentation**
- **Live Forces, M&S, Surrogates and Emulations**
- **Honest Broker**
- **Venue for Prototype Development**





## ***Experimentation Products***

- **Changes to present OPLANS, TTP, Doctrine**
  - 5027 - CSOF, Digital Fires Network
  - 1025 - Parallel Access Assurance:
    - ASW - Mine - FPB - Air- CDCM
  - C5F NBC Cell
  - C6F Targeting - Digital Target Folders
  - Navy Fires Doctrine
- **Explore NCO Technologies**
  - Horizontal Integration
  - Rapid Prototyping
  - Digital Fires Network
  - AEGIS Counterfire Mission Need Statement (MNS)
- **Define Capability Disconnects**
  - Targeting
  - Deconfliction
  - Bandwidth

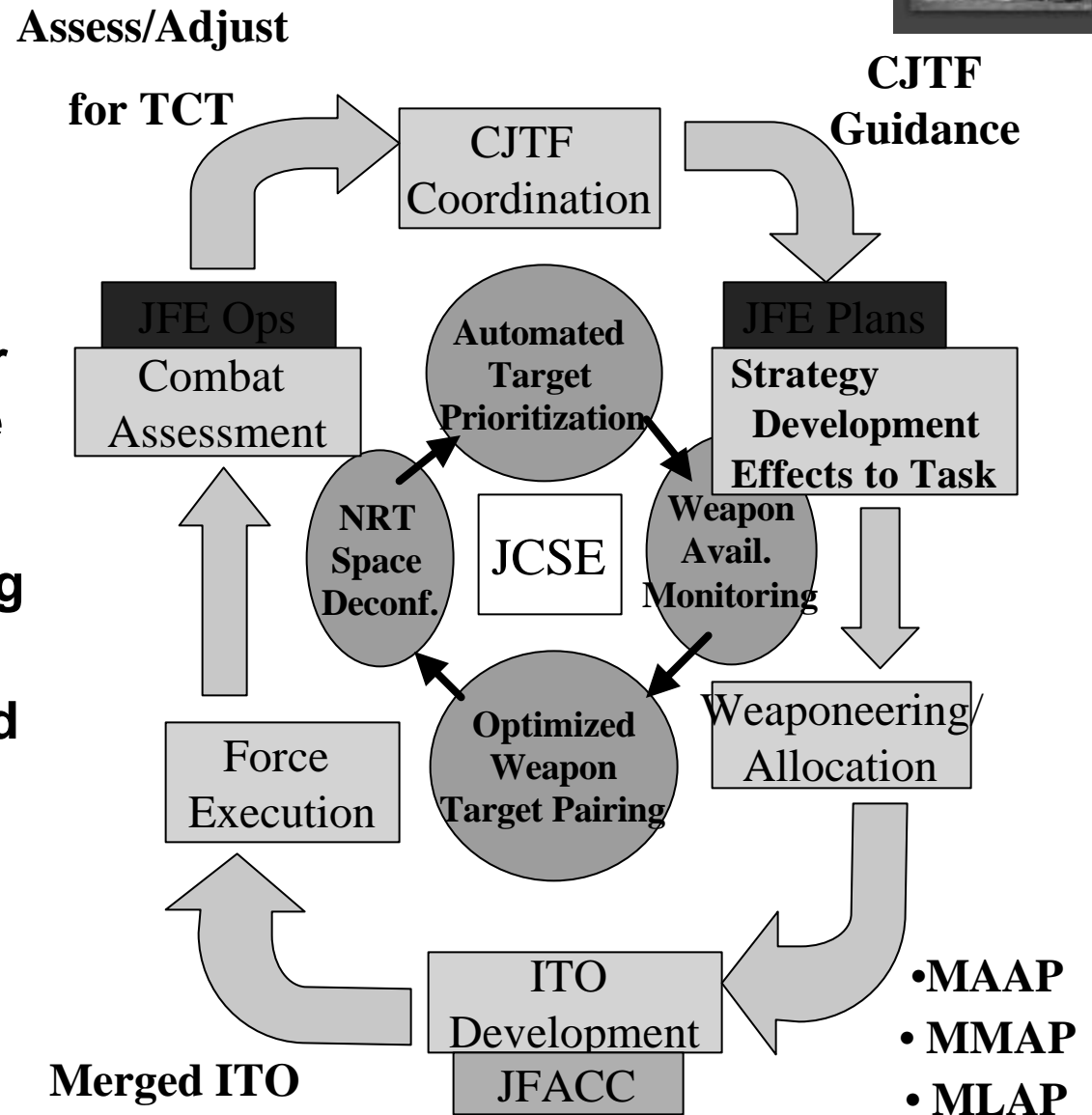


# Joint Fires Element (JFE)

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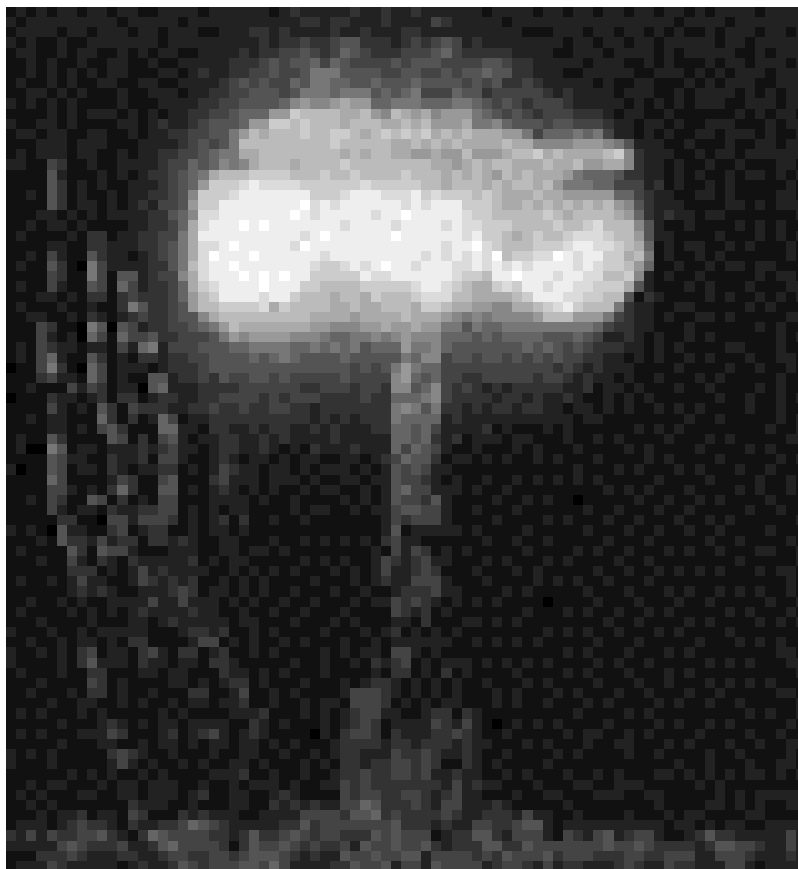


- **Goal: Integrate Joint Fires**
  - TACAIR no longer the default choice
- **Requirements**
  - Integrated Tasking Order
  - Maritime and Land Attack Plans
  - TCT at the JTF level (JFE Ops)?





# NBC Management



- **Discovery Phase**
- **WMD Ramifications**
  - Coalition support
  - Command and control
  - Fires to strategic level
- **NBC Management Cell**
  - “Center of excellence” for JTF staff
  - Integrated?
    - Offensive and Defensive
- **Future directions**
  - Consequence Management
  - Sensors
  - Early Warning

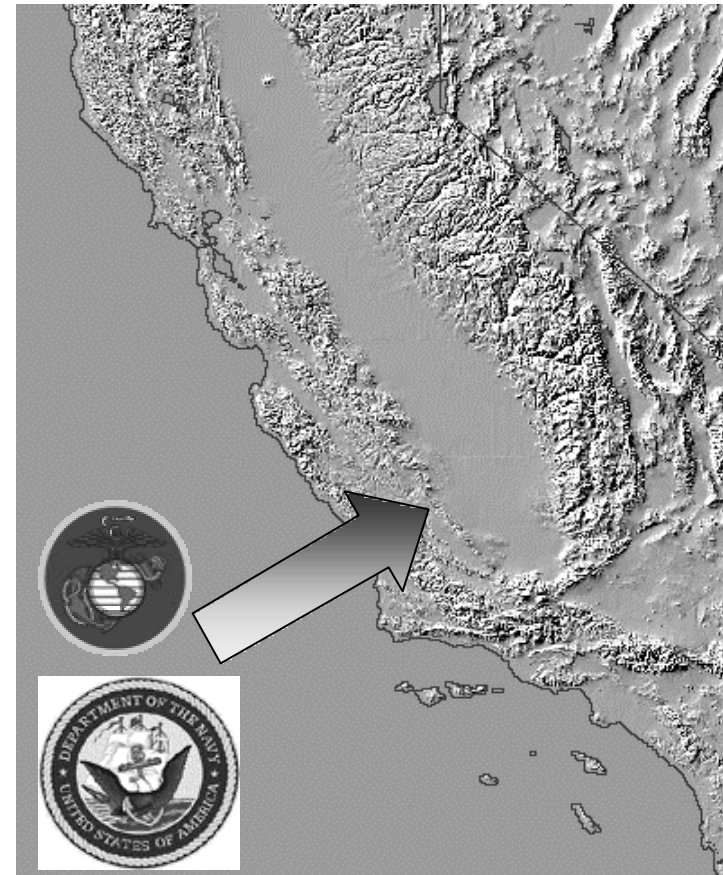


# *FBE India*

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- **Experiment Focus**
  - Access Assurance
    - Support for USMC Ops.
- **JTAMD**
  - Time Critical Strike
  - IPB
  - USN-USMC Interoperability
  - Consequence Management





*FBE Juliet*

**NAVY WARFARE DEVELOPMENT COMMAND**



- **Focus: Support for OPLAN**
- **C4I**
  - Korean Theater Air Improvement Program (KTAIP)
    - Joint Range Extension
    - DNMFL at the HTACC
  - Split AADC (USS Shiloh)
- **Active Defense**
  - Integration with amphibious operations
  - Insights into radar loading
- **Attack Operations**
  - Time Critical Targeting
- **Passive Defense**
  - SHARED Early Warning
  - AEGIS RJTAGS

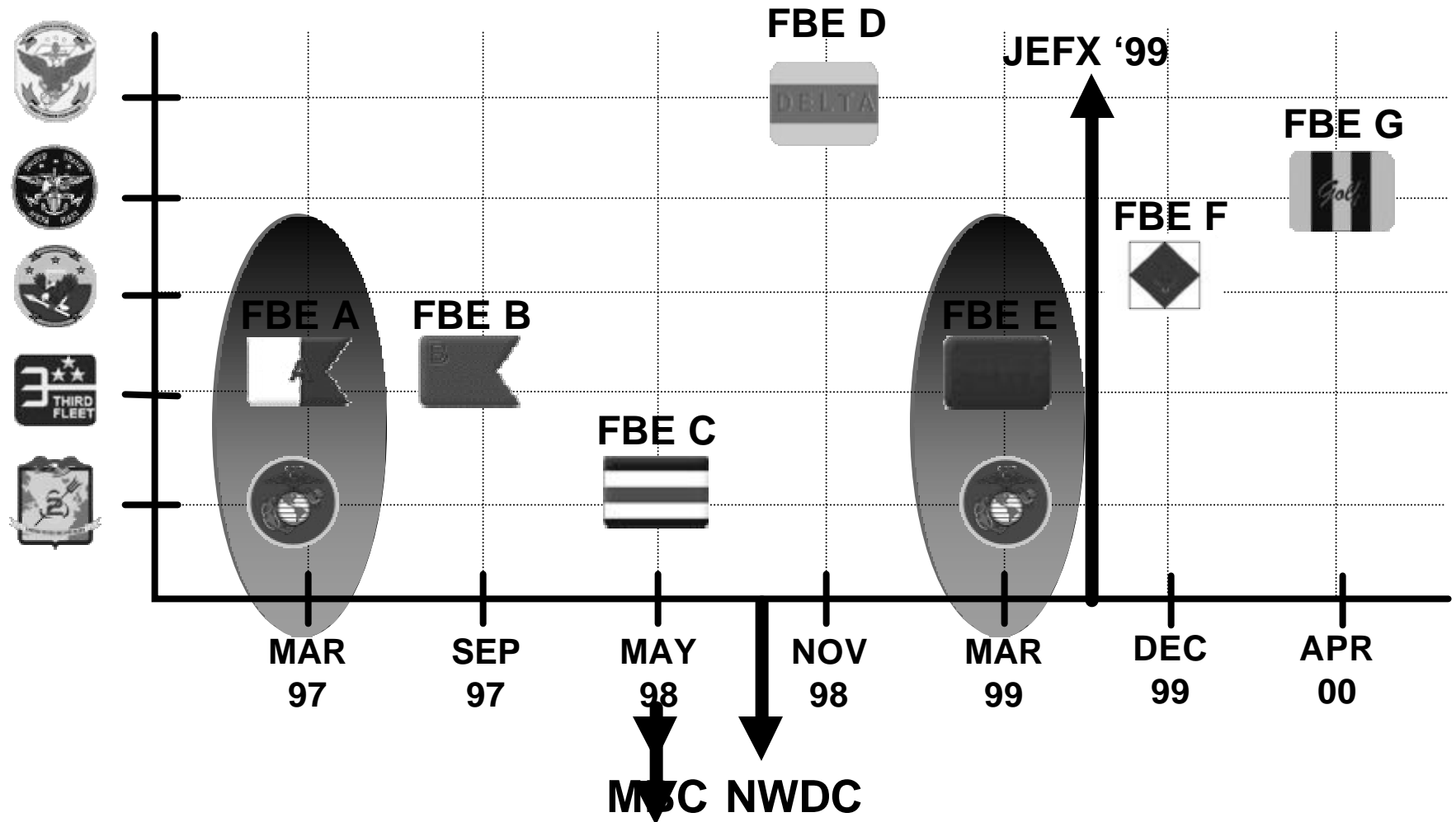




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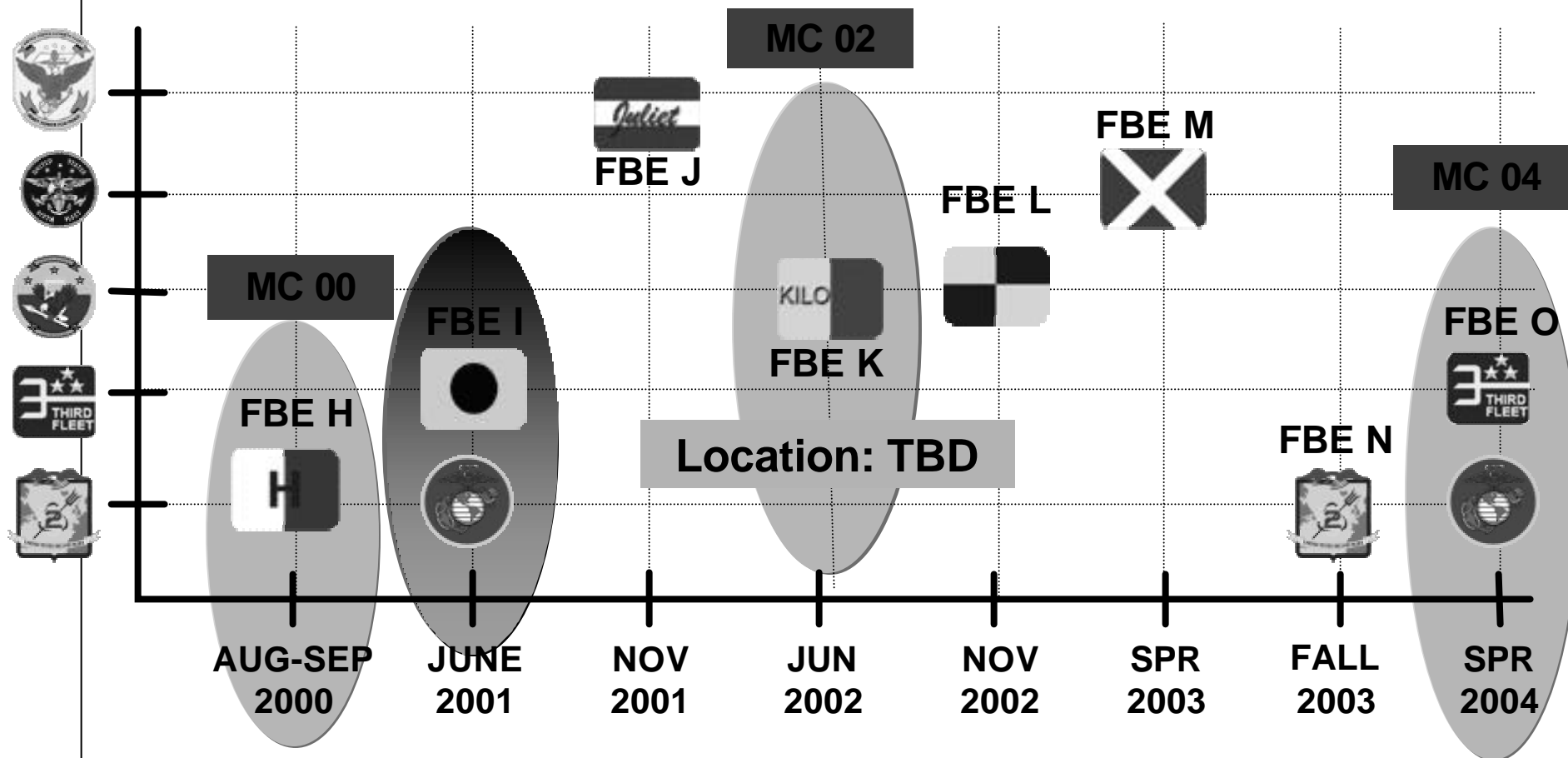
# Completed Fleet Battle Experiments USN – USMC Joint Experimentation





# FBE 5-Year Schedule

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- FBE H - Assured Access, USW, Naval Strike-Fires
- FBE I - Assured Access/OMFTS-STOM, Fires, Log, Sea Based C2, USW
- FBE J - Assured Access, Theater Fires, Sensors, JTAMD
- FBE K - Assured Access, R.D.O (Mill. Challenge 02)
- FBE L - Assured Access, Sea Based C2, JMF, IO